

GANS, CARL. 1967. *Rhineura*.
Catalogue of American Amphibians and Reptiles, p. 42.

***Rhineura* Cope**
Wide snouted worm-lizard

Rhineura Cope, 1861:75. Type-species, *Lepidosternon floridanum* Baird, 1859, by monotypy.

• **CONTENT.** One recent species, *R. floridana*, is recognized. Six fossil forms have been described, but their relationships are in question (see Fossil Record).

• **DEFINITION.** Amphisbaenids with a depressed snout. The rostral is azygous and the nostrils are positioned on the ventral side of the head. There are azygous rostro-nasal, prefrontal, and frontal shields in sequence along the dorsal midline of the head. The postmentals are paired; the pectoral shields are but faintly enlarged; there is a gular fold. There is a faint dorsal sulcus, but no lateral or ventral sulci. The tail is depressed, lacking autotomy; the segments of its dorsal surface are formed into conical tubercles.

The skull has a strong craniofacial angle. The vertical process of the azygous premaxilla is broad and triangular. The nasals are moderate in size and meet behind the premaxilla. The partes posteriores choanarum (posterior choanal openings) are present. Basipterygoid processes are present; a supratemporal is present; there is a long, oblique postarticular process on the mandible. The dentition is pleurodont: 1 premaxillary, 5 maxillary, and 6 dentary teeth.

The atlas is formed of arches only; it lacks hypocentral ossification. The vertebrae have ventrally flattened centra, broadened condyles, and paired subcentral foramina. The first few cervical vertebrae bear hypapophyses. Remnants of the shoulder girdle are lost.

• **DESCRIPTION.** There is no discussion of the general anatomy, nor have embryos yet been studied. The following structures were described, discussed, or figured in the papers indicated: general anatomy (Cope, 1900); osteology and hyoid (Cope, 1892a); skull (Gilmore, 1928; Zangerl, 1944; Vanzolini, 1951a, 1951b; Jollie, 1960); vertebrae (Zangerl, 1945; Holman, 1959); ribs (Camp, 1923); girdles (Cope, 1892b; Fürbringer, 1900); nasal region (Malan, 1946; Bellairs, 1950); organ of Vitalli (Simonetta, 1960); extracolumella (Camp, 1923); hyoid (Fürbringer, 1922; Zangerl, 1944); eye (Bonin, 1965; Eigenmann, 1902, 1909); lachrymal apparatus (Bellairs and Boyd, 1947, 1948); median tooth and innervation (Smith, Bellairs, and Miles, 1953); skin and dermal musculature (Camp, 1923); mesenteries (Cope, 1896); intestine (Jacobshagen, 1937; Lönnberg, 1902); lungs (Butler, 1895); thyroid (Lynn and Komorowski, 1957); chromosomes (Matthey, 1932; Gans, Huang, and Clark, 1967).

• **ILLUSTRATIONS.** The skull is illustrated here. See also the paragraph above.

• **FOSSIL RECORD.** Several species of this genus have been described, mainly on the basis of skulls, from the Oligo-

cene of Colorado (1 on map), South Dakota (2 on map), Nebraska (3 on map), and Wyoming (4 on map). These are: *Rhineura coloradensis* (Cope, 1873:19), *R. hatcheri* Baur (1893:998), *R. sternbergi* Walker (1932:225), *R. hibbardi* Taylor (1951:539), *R. amblyceps* Taylor (1951:543), and *R. wilsoni* Taylor (1951:548). Brattstrom (1958:43) claimed that *R. amblyceps* is a synonym of *R. hatcheri*. Kluge (*in litt.*, cf. MacDonald, 1963:164) reported the discovery of a *Rhineura*-like species from the Arikarean of South Dakota (Miocene; 5 on map) and Hecht (1959:137) reported numerous vertebrae from the upper part of the Bridger formation (Middle Eocene) at the southern end of the Green River Basin, Wyoming (6 on map). See Gilmore (1938:13), Gilmore and Jepsen (1951:30), Taylor (1951:523) and Galbreath (1953:8) for comments in these and related fossils.

Vanzolini (1951b:116) erected the new genus *Pseudorhineura* for *R. minutus* Gilmore (1938:12).

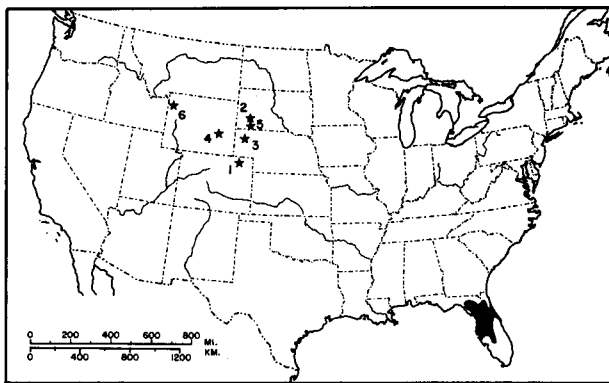
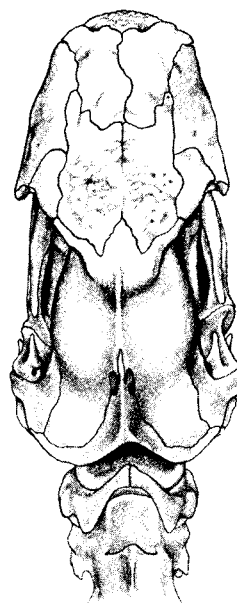
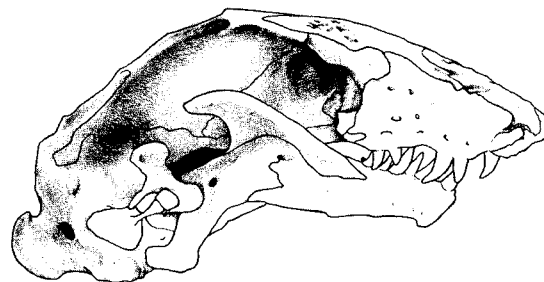
Holman (1958:278; 1959:99) reported *R. floridana* from the Pleistocene of Florida.

• **ETYMOLOGY.** The generic name *Rhineura* is derived from the Greek words *rhino*, nose and *eurys*, broad or wide.

• **REMARKS.** The generic name has been accepted since Cope (1861:75) pointed out the obvious differences from *Lepidosternum* (now *Leposternon*).

COMMENTS

The amphisbaenids are here recognized as an order of the superorder Squamata. They are thus accorded a rank equal to that of the Sauria and Serpentes with which they share the unique characteristic of hemipenes, but from which they differ in numerous morphological details (Gans, ms.).



MAP. The range of the living species, *Rhineura floridana*, is indicated in black. Stars mark fossil localities; see under "Fossil Record" for further information.

FIGURE. Lateral, dorsal, and ventral views of the skull of an adult *Rhineura floridana* (Gans collection).

The pleurodont species appear distinct from the acrodon forms (Gans and Lynn, 1965) though this need not imply that they are polyphyletic (Matthey, 1951:171). Vanzolini (1951a; 1951b) recognized a subfamily Rhineurinae including the forms with a strong craniofacial angle and a horizontal snout. The assemblage appears polyphyletic; the intra-category differences are almost as great as those between the Rhineurinae and the Amphisbaeninae. A better knowledge of the morphology and embryology of the several genera would be most desirable.

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